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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,205	02/16/2004	Bhupendra Kumar Gupta	137229	2204
30952	7590	06/05/2006	EXAMINER	
HARTMAN AND HARTMAN, P.C.			BALDWIN, GORDON	
552 EAST 700 NORTH			ART UNIT	
VAIPARAISO, IN 46383			PAPER NUMBER	

1775

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/708,205

Applicant(s)

GUPTA ET AL.

Examiner

Gordon R. Baldwin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 2/20/06
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>20040216</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 5, 6, 10, 11** and rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

They are considered vague and indefinite because it is not clear how the wear resistant coating can have a composition different from the braze tape when the wear resistant coating is formed by machining the built up portion of the braze tape .

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 2, 7, 8, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rafferty (Pat. No. 6,004,683) and further in view of Schnell (Pub. No. 20030066177A1) and Caddell (Pub no. 2004/0096322).**

**Consider claim 1**, Rafferty teaches a laminated tape (11) used for the repair of hard metal surfaces (12) using a brazing technique. (Col. 3 lines 5-13) Inside the tape, a diffusion braze layer is taught and that braze layer can be cobalt, and the diffusion

brazing alloy is typically an alloy similar in composition to the base metal. (Col. 3 lines 59-67) Additionally, Rafferty teaches the use of a brazing alloy and base metal powder, which can be cobalt based according to Col. 4 lines 1-24(#5). Then this tape composite (11) is used on the damaged area of the base metal surface (12) by covering it with the repair tape with the diffusion layer against the surface and then the object is heated up to a temperature of at least about 800 degrees F to 2300 degrees F which will cause the brazing alloy to melt and infiltrate the base metal powder from above and below and with cobalt at least 1750 degrees F is required. Then the brazing alloy will then, upon cooling bond with the base metal powder to the metal surface. The brazing temperatures are held for an extended period of time, 30 minutes to 3 hours, the softening or melting point of the repair can approach the softening or melting point of the base metal, resulting in a higher quality repair, due to it having more base metal qualities. (Col. 5 lines 7-28)

Rafferty does not teach the removal of the worn surface or the use of a slurry with the brazing material or the machining of the built up surface to remove a portion of the brazing tape.

However, Schnell teaches the use of a brazing slurry to be applied into or over any crack in a super-alloy. (Para. 0007 and 0012) in addition to Schnell teaching that before the applying the method of brazing, a protective coating such as a MCrAlY or thermal barrier has to be removed by processes including grit blasting or mechanical grinding (Para. 0023).

Additionally, Caddell teaches that parts of turbine engine components after they have had a braze cycle, machining operations are performed on the collar (38) to provide required clearance to adjust the engine components. (Para. 0035) Machining operations are considered to mean a removal of the surface portion of the braze tape.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Rafferty, which teaches the braze tape composition (cobalt based) that is used to repair worn surfaces with Schnell, which teaches the use of a slurry and removal of a surface region to repair the component. Additionally it is obvious to combine Rafferty and Schnell with Caddell which teaches machining the surface of the braze surface after a heat treatment. These three are combined so that they may provide for the removal of the oxides before the brazing, which cleans the surface layer for a better diffusion bond, with the use of the slurry to provide for a better mixture of powdered base material into cracks and gaps. Finally, after the heat treatment, the performing machine operations upon the braze coat, would help to avoid discontinuities of the joined surface in addition to providing the desired dimensions for the repaired surface.

Concerning the aging of the braze tape at a temperature of about 1090 degrees Celsius to about 1150 degrees Celsius, the claims differ in that Rafferty does not teach the exact same proportions as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the compositional proportions taught by Rafferty overlap the instantly claimed proportions and therefore

are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

“The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages”, In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

**Consider claim 2**, Rafferty teaches a repair tape with a majority of the layers contain braze material. (Col. 2 lines 1-4)

**Consider claim 7**, Rafferty (Col. 1 lines 12-20), Schnell (Para. 0002) and Caddell (Para. 0007) all teach the use of their coating on the internal components of turbine engines, while they do not explicitly teach the shroud component, they do teach that their coating can be used to coat components in gas turbine engine and therefore they are consider to teach that all the components may be coated with such a coating, which is considered to include a shroud support component.

**Consider claim 8**, Rafferty teaches a laminated tape (11) used for the repair of hard metal surfaces (12) using a brazing technique. (Col. 3 lines 5-13) Inside the tape, a diffusion braze layer is taught and that braze layer can be cobalt, and the diffusion braze alloy is typically an alloy similar in composition to be base metal. (Col. 3 lines 59-

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67) Additionally, Rafferty teaches the use of a braze alloy and base metal powder, which can be cobalt based according to Col. 4 lines 1-24(#5). Then this tape composite (11) is used on the damaged area of the base metal surface (12) by covering it with the repair tape with the diffusion layer against the surface and then object is heated up to a temperature of at least about 800 degrees F to 2300 degrees F which will cause the braze alloy to melt and infiltrate the base metal powder from above and below and with cobalt at least 1750 degrees F is required. Then the braze alloy will then, upon cooling bond with the base metal powder to the metal surface. The brazing temperatures are held for an extended period of time, 30 minutes to 3 hours, the softening or melting point of the repair can approach the softening or melting point of the base metal, resulting in a higher quality repair, due to it having more base metal qualities. (Col. 5 lines 7-28)

Schnell teaches the use of a brazing slurry to be applied into or over any crack in a super-alloy. (Para. 0007 and 0012) in addition to Schnell teaching that before the applying the method of brazing, a protective coating such as a MCrAlY or thermal barrier has to be removed by processes including grit blasting or mechanical grinding (Para. 0023).

Caddell teaches that parts of turbine engine components after they have had a braze cycle, machining operations are performed on the collar (38) to provide required clearance to adjust the engine components. (Para. 0035) Machining operations are considered to mean a removal of the surface portion of the braze tape.

Additionally, Rafferty (Col. 1 lines 12-20), Schnell (Para. 0002) and Caddell (Para. 0007) all teach the use of their coating on the internal components of turbine engines, while they do not explicitly teach the shroud support component, they do teach that their coating can be used to coat components in gas turbine engine and therefore they are considered to teach that all the components may be coated with such a coating, which is considered to include a shroud support component.

**Consider claim 12 and 14**, Rafferty, Schnell and Caddell disclose the claimed invention except for Schnell using different temperatures and times for the second thermal treatment (Para. 0012). It would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the heat treatment to the temperature range and time as taught in the application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

**Claim 3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rafferty (Pat. No. 6,004,683) and Schnell (Pub. No. 20030066177A1) and Caddell (Pub. No. 2004/0096322), in further view of Johnson (Pub. No. 2002/0076571 A1).**

**Consider claim 3**, while Schnell teaches the use of a braze slurry, Schnell does not teach the use of a braze tape with a powder of the wear-resistant alloy and a binder. However, Johnson teaches the use of a braze tape, which is formed from a slurry of metal powder (which can be cobalt-based alloys, Para. 0017) and binder in a liquid.



medium. (Para. 0016) It would have been obvious to a person of ordinary skill at the time of the invention to combine the braze slurry of Schnell with the braze tape of Johnson to provide more readily usable tape-cast braze sheet with uniform thickness throughout its structure. (Para. 0019)

**Consider claim 13 and 15**, Johnson teaches the use of Ra values from 0.1 mils to 25 mils. This range is considered to encompass the range claimed by the applicants.

**Claim 4, 7 and 9 and rejected under 35 U.S.C. 103(a) as being unpatentable over Rafferty (Pat. No. 6,004,683), Schnell (Pub. No. 20030066177A1) and Caddell (Pub no. 2004/0096322) in further view of Chesnes (Pat. No. 6,195,864 B1)**

**Consider claim 4 and 9**, Rafferty, Schnell and Caddell teach the claimed invention with the exception of the percentages mentioned in claim (4). However Chesnes teaches a cobalt-based and diffusion braze repair of superalloy articles that has a braze material who's composition encompass the range percentages of claim (4). (Col. 5 lines 5-33)

It would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Rafferty, Schnell and Caddell with the braze material of Chesnes to provide for a wider range of material the can be suitably close in material composition to a wider range of superalloys.

**Consider claim 7**, Rafferty (Col. 1 lines 12-20), Schnell (Para. 0002), Caddell (Para. 0007) and Chesnes (Col. 3 lines 6-13) all teach the use of their coating on the internal components of turbine engines, while they do not explicitly teach the shroud component, they do teach that their coating can be used to coat components in gas

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turbine engine and therefore they are consider to teach that all the components may be coated with such a coating, which is considered to include a shroud support component.


***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon R. Baldwin whose telephone number is (571)272-5166. The examiner can normally be reached on M-F 7:45-5:15.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GRB

  
JENNIFER C. MCNEIL  
SUPERVISORY PATENT EXAMINER  
4/24/06